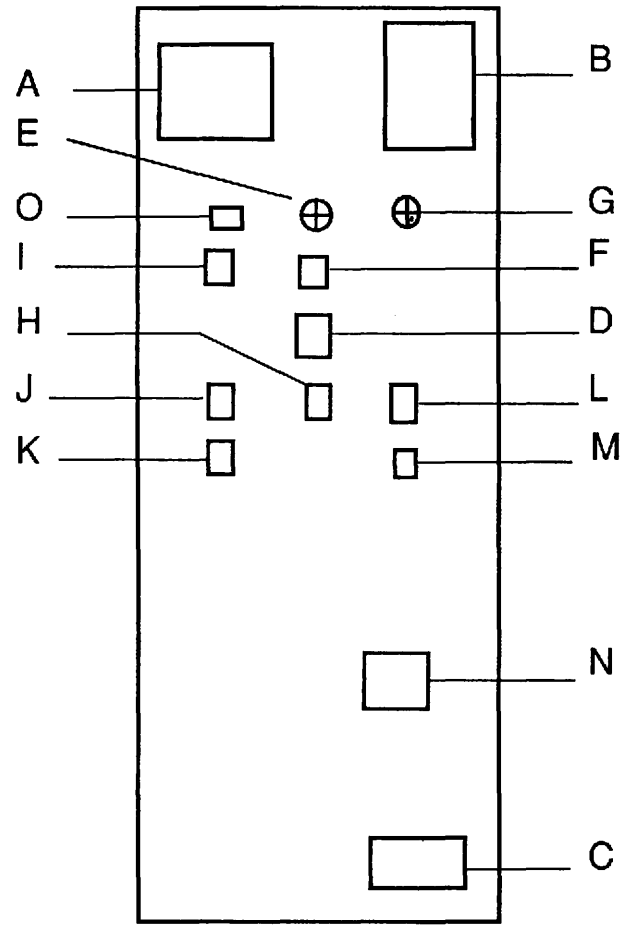
11 - LOCATION OF CONTROL DEVICES

11 - 1 ON THE ELECTRICAL CABINET



A : Machine identification tag
B : Bending chart
C : Approval plate
D : Master switch
E : ON indicator light
F : Motor start-up control
G : Green motor start-up indicator light
H : Cycle selection
I : Plotting stop control
J : Coining selection (Hydraulic back gauge time delay deletion)
K : Control with or without numerical control
L : Automatic pressure holding control
M : Hour meter
N : Fan
O : Radius bending selection

11 - 2 START-UP

- Turn master switch (D); the white indicator light (E) lights up.
- Turn motor starting key (F); the green indicator light (G) lights up.

If the machine has numerical control:

- Put switch (K) on numerical control position.
- The numerical control lights up and makes a sound modulation.
- The numerical control is then ready to be reset.

11 - 3 DESCRIPTION OF CYCLES

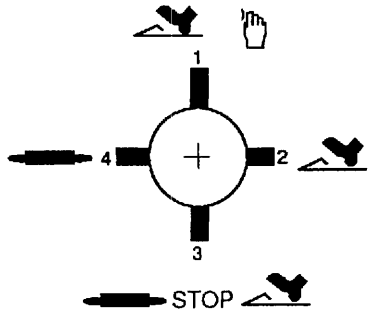
THE OPENING PEDAL OVERRIDES IN ALL CASES.

Above the mute level, the opening pedal must be held down in order to open.

Below the mute level, the opening pedal must be released. In this case, the press is open to B.D.C. as set.

CYCLE 1 : adjustment

- Means of control: pedal
- Cycle selector (H) on position 1
- On all travel: working (operating) speed
- Stoppage at mute level if the selection was made on selector (I)



CYCLE 2 :

- Means of control: pedal
- Cycle selector (H) on position 2

BREAKDOWN OF CYCLE

- Closure at approach speed up to mute level.
- May or may not stop at sequence level (selection made by switch (I)).
- Closure at working speed.
- Automatic pressure holding or pressure holding by pedal, according to selection made on selector (L).
- Automatic decompression.
- Opening at high-speed down B.D.C. as set.

RELEASE OF THE PEDAL DURING THE CLOSURE PHASE CAUSES THE BEAM TO STOP IN WHATEVER POSITION IT IS FOUND.

CYCLE 3 :

- Means of control two-hand control + pedal.
- Cycle selector (H) on position 3.

BREAKDOWN OF CYCLE

- Closure at approach speed up to mute level, by means of two-hand control panel
- Mandatory stoppage at sequence level
- Release of two-hand control
- Closure at working speed above mute level, by means of pedal
- Automatic pressure holding or pressure holding by means of pedal, according to selection made on (L)
- Automatic decompression
- Opening at high-speed up to B.D.C. as set.

RELEASE OF THE CONTROL MEANS DURING THE CLOSING PHASE CAUSES THE BEAM TO STOP IN WHATEVER POSITION IT IS FOUND.

CYCLE 4 :

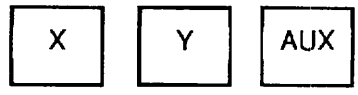
- Means of control: two-hand control panel
- Cycle selector (H) on position 4.

BREAKDOWN OF CYCLE

- This cycle is exactly like cycle 2; the only difference is in the selection of the means of control.

11 - 4 ON NC CONTROL PANEL (OPTION)

Function keys:



Programming of axes, items 1, 2 and 3 (white)

- KEY: X — REAR GAUGE BLOCK, item 1 (white)
- KEY: Y — TOOL PENETRATION (2) (white)
- KEY: AUX — AUXILIARY AXIS, item 3 (white)
- KEY: →τ — REAR GAUGE BLOCK WITHDRAWAL TIME DELAY (4)(white)
- KEY: M — AUXILIARY FUNCTION PROGRAMMING (5) (blue)
- KEY: ⋀⋀ — FAST MOVEMENT OF AXES IN MANUAL MODE (6) (blue)
- KEY: + - — FORWARD, REVERSE, UP, DOWN CONTROL IN LOW-SPEED MANUAL MODE (7 and 8) (blue)
- KEY: P — PROGRAM CALL (9) (yellow)
- KEY: N — PROGRAM STEP CALL (10) (yellow)
- KEY: ACCESS TO AXIS SETTING AND CALIBRATION VALUE PLUS EMERGENCY STOPPAGE (11) (red)
- KEY: DIRECT STORAGE OF CURRENT POSITION OF AXES IN MEMORY (setting) (12) (yellow)
- KEY: " — ACCESS TO INCH OR MM CONVERSION (this operation lights up the corresponding LED) (27 and 13) (yellow)

- KEY: NR — NUMBER FOR RECALLING A PROGRAM STORED IN EXTERNAL MEMORY (14) (yellow)

- KEY: — TRANSFER FROM NUMERICAL CONTROL MEMORY TO EXTERNAL MEMORY (16) (yellow)

- KEY: — TRANSFER FROM EXTERNAL MEMORY TO NUMERICAL CONTROL MEMORY (yellow)

- KEY: // — DATA CANCELLATION (25)

- KEY: + — CORRECTION OF DATA ON X AND Y AXES (26)

- KEY: - — CORRECTION OF DATA ON X AND Y AXES (26)

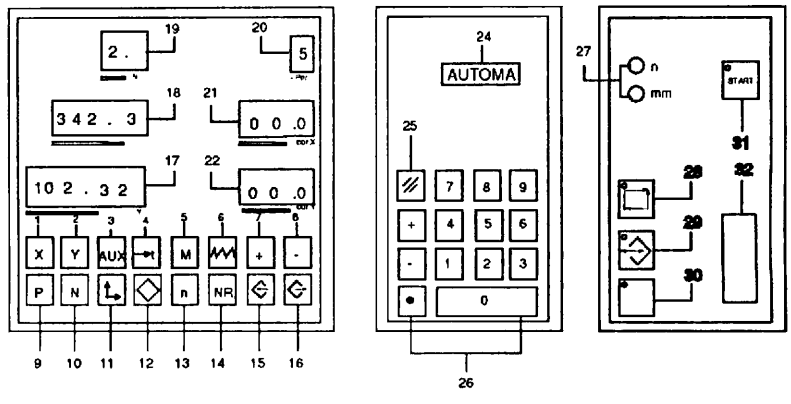
- KEY: ● — WRITE OF DIMENSIONS, WITH DECIMALS, ON X AND Y AXES (comma decimal function) (26)

- KEY: START — STARTS ACTIVITY EXECUTION (resetting, program start) (31)

- KEY: — OPERATION IN AUTOMATIC MODE (28)

- KEY: — DATA READ AND PROGRAMMING and program recall (29) (WRITE MODE)

- KEY: — MANUAL CONTROL OF MOVEMENT AXES (30)



NOTE :

Use of certain keys is associated with the intervention of a sound warning which indicates that a cycle is being executed, that an operation has been completed, or that an operation is being carried out under abnormal conditions.

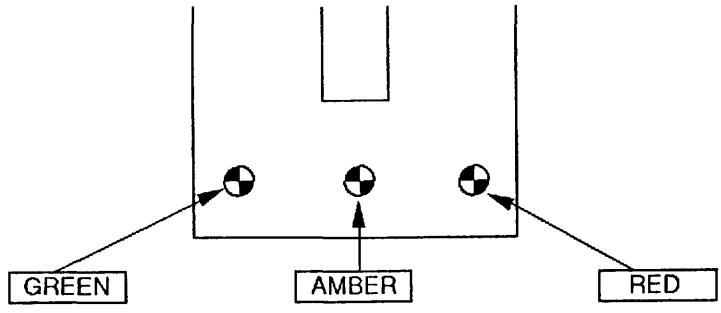
11.5 - USE OF THE LIGHT GUARD

UK safety standards

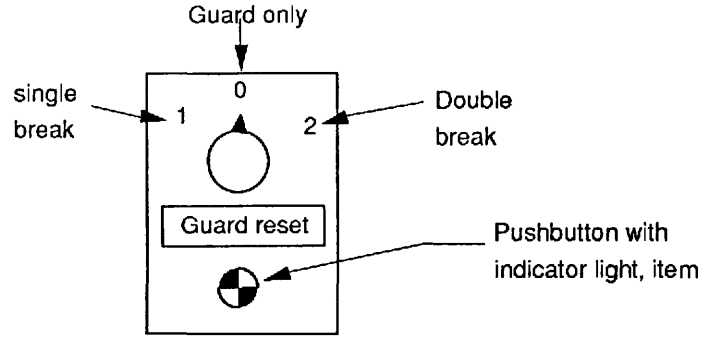
- Guard only
- Single break
- Double break

ELEMENT FOR SELECTION OF THE CYCLE AND CONTROL MODE

- GUARD CONDITION INDICATOR LIGHTS

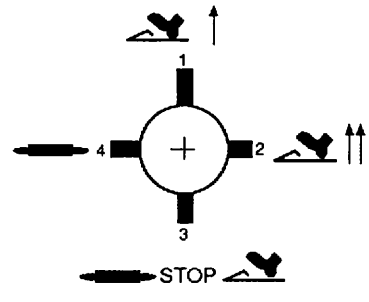


- GUARD CONTROL BOX



- CYCLE SELECTOR

(Locate on numerical controlL panel - ITPS)



1. Manual *(slow speed)*
2. Normal
3. Single/double break
4. 2 hand operation *(not used in the UK)*

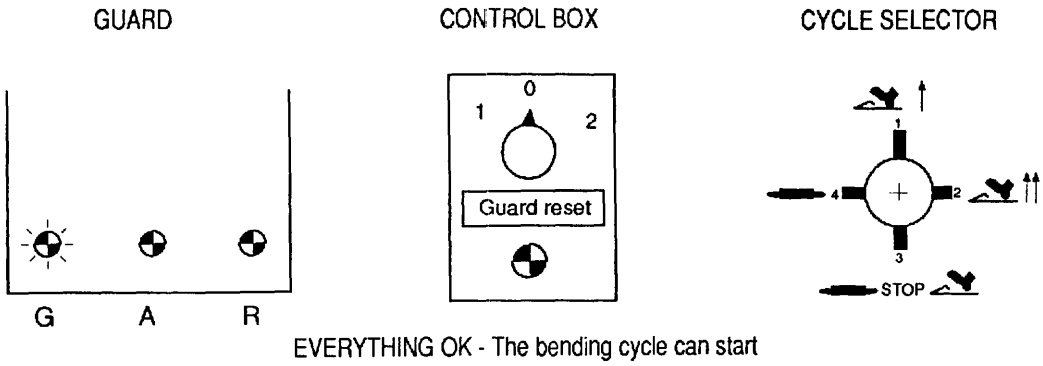
11.5.1 GUARD MODE ONLY

The guard has a safety function only

The control box selector is set to "guard only"

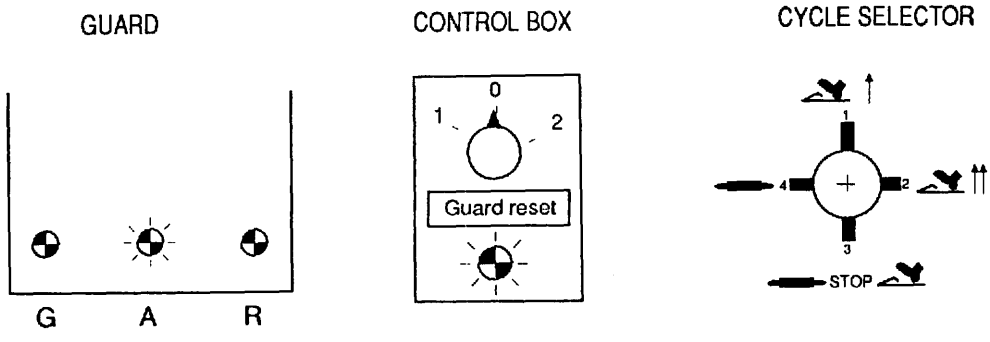
The cycle selector is set to "1" or "2"

1st example

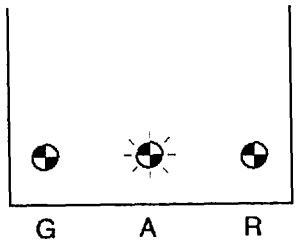


EVERYTHING OK - The bending cycle can start

2nd example



OR



REQUIRES RESET

The cycle can only start after guard reset

RESET PROCEDURE

- Press pushbutton "GUARD RESET"

- Interrupt the guard once or twice.

a) "Guard Reset" remains on:

- The beam has not reached the bottom dead point
  Fully press the "opening" pedal to teach the bottom dead point.

- Press GUARD RESET - The indicator light comes off. The green indicator light of the guard is on
  The bending cycle can start.

CYCLE SEQUENCING

Press the "closing" pedal
2 situations may occur:

a) There is no interruption of guard during the approach phase:

The press brake closes down to the mute level. Once this level is reached, the amber indicator light of the guard comes on, and the green indicator goes off.

From that moment the light guard is inoperative, *(since the press brake is in the safety area)*, and the "GUARD OFF" warning light will come on.

The bending sequence can then take place. After bending the press brake is brought down to the bottom dead point.

Once the press brake has reached the bottom dead point, everything is O.K. and the next cycle can start: Interrupt the guard once, the machine is then reset *(green light is on)*.

b) If the guard is interrupted during the approach stroke: the cycle is stopped, the ram falls away and a reset of the guard is necessary, *(see guard reset)*.

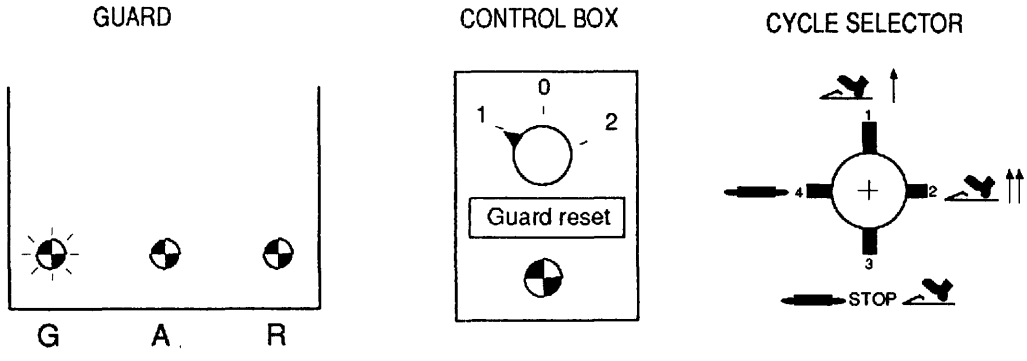
11.5.2. - "SINGLE BREAK" MODE

(The guard has a safety function and a control function)

Switch the control to selector to position: "SINGLE BREAK"

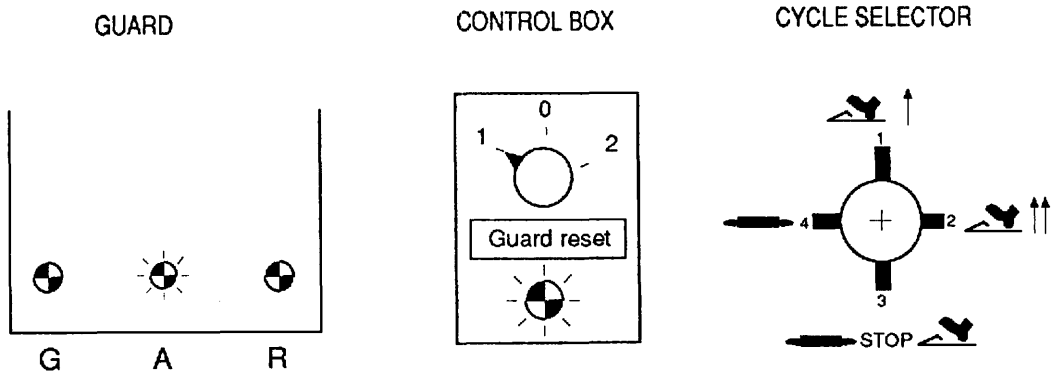
Switch the cycle selector to position: CYCLE 3

1st example



EVERYTHING OK - The bending cycle can start

2nd example



RESET - The cycle can start only after reset

In this case proceed in the same way as described in paragraph "GUARD ONLY" i.e., by positioning the press brake at the bottom dead point.

CYCLE SEQUENCE

Interrupt the guard once. The green indicator light comes on. The press brake closes fast and stops at the mute level.

a) During this phase, if the guard is interrupted, the closing stroke stops and the ram falls away. A reset is necessary, *(see reset)*.

b) If there is no interruption of the guard during the approach stroke, the cycle is completed by pressing the "closing" pedal above the mute point.

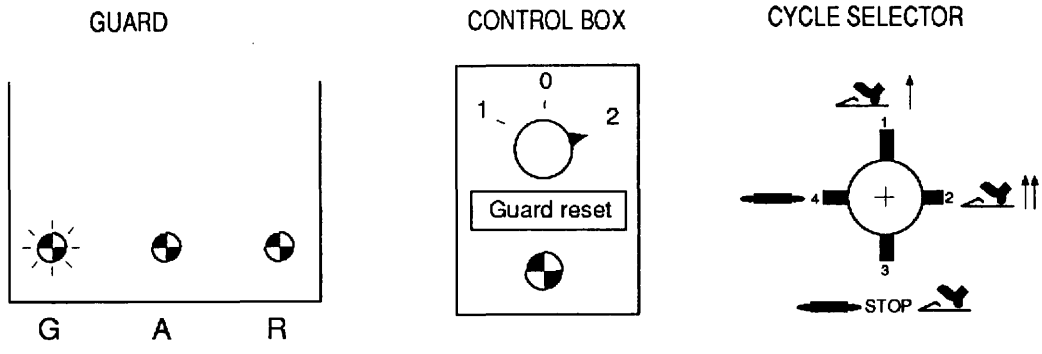
Once the press brake has reached the bottom dead point, everything is OK and the next cycle can start: interrupt the guard once.

11.5.3. DOUBLE BREAK MODE

(The guard has a safety function and a control function)

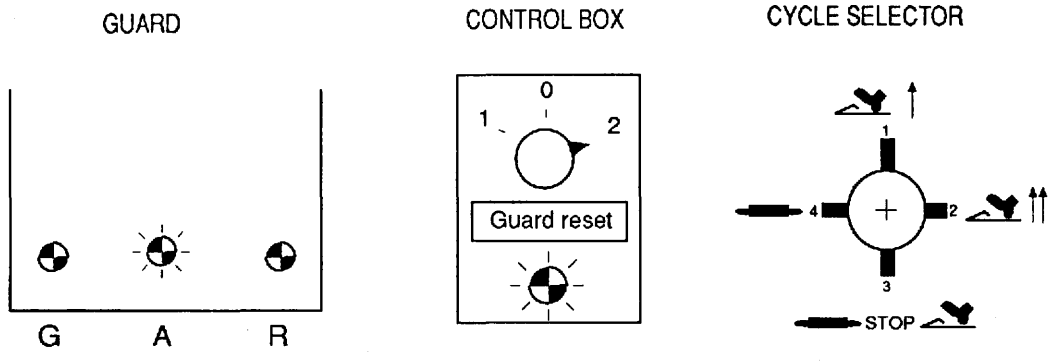
- Switch the Control box selector to position 2: "DOUBLE BREAK"

- Switch the Cycle selector to position 3: CYCLE 3



EVERYTHING OK - The bending cycle can start

1st example



RESET - The cycle can start only after reset

2nd example

In this case proceed as described in paragraph "GUARD ONLY" i.e., by positioning the press brake at the bottom dead point.

CYCLE SEQUENCE

Same operation as in "SINGLE BREAK" mode except that the guard has to be interrupted twice before initiation of the press brake.

WARNING

During the first cycle, one SINGLE guard interruption initiates the machine cyle.

11. 5. 4 - IMPORTANT

1) In the "SINGLE BREAK" and "DOUBLE BREAK" cycles, once the cycle is completed if no other operation is performed and after 30 seconds*, the "GUARD RESET" push button comes on.

The selector switch must be positioned back to "GUARD ONLY" ; press "GUARD RESET", set the selector to the required cycle 1 or 2, and interrupt the guard once.

* The timing relay KA 21 inside the electrical panel is set to 30 seconds, which is assumed to be the normal component cycle time. This should be adjusted for greater or lesser cycle times so that if the machine is not initiated within this period, the controls will revert back to normal means of initiation.

This is a safety feature and should be adjusted by a competent person.

2) The mute position *("GUARD OFF")*, should be set at a point just above the material thickness which is being processed. Under no circumstances can it be set at more than 6mm above material thickness.

3) The distance bars fixed to the front of the machine are to prevent any person walking through the light curtain and Auto initiation occurring. They should be maintained in their present condition and should not be removed under any circumstances.